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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Chicago, IL 60661				
EXAMINER				
BENSON, ADAM RAY				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary**Application No.**

10/565,227

Applicant(s)

COCHRANE, RICHARD

Examiner

ADAM BENSON

Art Unit

3745

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06/01/2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 5) ☒ Claim(s) 1-26 is/are pending in the application.
- 5a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 6) ☐ Claim(s) ____ is/are allowed.
- 7) ☒ Claim(s) 1-6 and 25-26 is/are rejected.
- 8) ☒ Claim(s) 7-24 is/are objected to.
- 9) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 10) ☒ The specification is objected to by the Examiner.
- 11) ☒ The drawing(s) filed on 01/21/2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-893)
Paper No(s)/Mail Date 01/21/2006

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The abstract of the disclosure is objected to because the term "comprising" was found.

3. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609.04(a) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

Claim Objections

4. Claims 7-24 objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim can not depend from any other multiple dependent

claim. See MPEP § 608.01(n). Accordingly, claims 7-24 not been further treated on the merits.

5. Claim 23 is objected to because of the following informalities: the term "on" in line 2 appears to be a misspelling of "one". Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 2-24, and 26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

8. Claims 2-24 recite the limitation "A vertical-axis wind turbine" in line 1 of each claim. It is not clear that the recited vertical-axis wind turbine is the vertical-axis wind turbine of claim 1.

9. Claim 26 recites the limitation "A vertical-axis wind turbine" in line 1. It is not clear that the recited vertical-axis wind turbine is the vertical-axis wind turbine of claim 25.

To allow further examination it is understood that the vertical-axis wind turbine of dependent claims 2-24 is the same vertical-axis wind turbine of dependent claim 1, and the vertical-axis wind turbine of dependent claim 26 is the same vertical-axis wind turbine of independent claim 25.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 1, and 25-26 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Barker (US Patent No. 1217684).

In Reference to Claim 1

Barker teaches:

A vertical-axis wind turbine (see page 1 lines 15-17) comprising a shaft rotatable about a longitudinal axis and a plurality of substantially rigid blades mechanically coupled to the shaft, each of the plurality of blades (see Figure 1) comprising an elongate body having an upper end and a lower end, wherein the upper end and the lower end of each blade are rotationally off-set from each other about the longitudinal axis such that each blade has a helix-like form (see Figure 1), the section of the elongate body of each blade, taken perpendicularly to the longitudinal axis, being shaped as an aerofoil having a leading edge and a trailing edge and a camber line defined between the leading edge and the trailing edge, characterized in that the aerofoil is arcuately shaped such that the camber line lies along a line of constant curvature having a finite radius of curvature, R' (see Figure 1 and page 1 lines 24-25).

In Reference to Claim 25

Barker teaches:

A vertical-axis wind turbine (see page 1 lines 15-17) comprising a shaft rotatable about a longitudinal axis and a plurality of substantially rigid blades mechanically coupled to the shaft, each of the plurality of blades (see Figure 1) comprising an elongate body having an upper end and a lower end, wherein the upper end and the lower end of each blade are rotationally off-set from each other about the longitudinal axis such that each blade has a helix-like form (see Figure 1), the section of the elongate body of each blade, taken perpendicularly to the longitudinal axis, being shaped as an aerofoil having a leading edge and a trailing edge and a camber line defined between the leading edge and the trailing edge, characterized in that the length of the camber line of each blade decreases towards the upper and/or lower ends relative to a central portion of each blade (see Figure 3 and page 1 lines 74-75).

In Reference to Claim 26

Barker teaches:

A vertical-axis wind turbine, in the rejection of claim 25 above, wherein the length of the camber line of each blade decreases towards at least a downwind end of each blade (see Figure 3 and page 1 lines 74-75).

12. Claims 1-3 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Goldberg (US Patent No. 5405246).

In Reference to Claim 1

Goldberg teaches:

A vertical-axis wind turbine comprising a shaft rotatable about a longitudinal axis (see Figure 1 and the abstract) and a plurality of substantially rigid blades mechanically coupled to the shaft, each of the plurality of blades comprising an elongate body having an upper end and a lower end (see Figure 1), wherein the upper end and the lower end of each blade are rotationally off-set from each other about the longitudinal axis such that each blade has a helix-like form (see abstract), the section of the elongate body of each blade, taken perpendicularly to the longitudinal axis, being shaped as an aerofoil having a leading edge and a trailing edge and a camber line defined between the leading edge and the trailing edge (see Figure 1), characterized in that the aerofoil is arcuately shaped such that the camber line lies along a line of constant curvature having a finite radius of curvature, R' (see Figure 3, Figure 4B, and column 7 lines 21-32).

In Reference to Claim 2

Goldberg teaches:

A vertical-axis wind turbine, in the rejection of claim 1 above, wherein the radial distance R of the camber line of each blade from the

longitudinal axis varies along the length of the blade (see column 5 lines 45-54).

In Reference to Claim 3

Goldberg teaches:

A vertical-axis wind turbine, in the rejection of claim 2 above, wherein the radius of curvature R' of the camber line varies along the length of each blade (see Figure 3, Figure 4B, and column 5 lines 45-54).

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. Claims 4/2, 5/4/2, 6/4/2, and claims 4/3, 5/4/3, and 6/4/3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goldberg (US Patent No. 5405246) as applied in claims 2 and 3, respectively, above, further in view of a design choice.

In Reference to Claim 4/2 and 4/3

Goldberg teaches:

The vertical-axis wind turbine, in the rejection of claim 2 or 3 above.

Goldberg does not teach:

A vertical-axis wind turbine wherein $1.00R \leq R' \leq 1.12R$.

Since applicant has not disclosed that having radius of curvature of the camber line within this specific range of R dependent values solves

any stated problem or is for any particular purpose above the fact that the blades of the vertical-axis wind turbine have a camber line with a constant radius of curvature such that the blades interact with wind to cause rotation of the blades about the longitudinal axis and it appears that the camber lines of the blades of Goldberg would perform equally well having the shape and dimensions as claimed by applicant, it would have been an obvious matter of design choice to modify the camber lines of the blades of Goldberg by utilizing the specific shape and dimensions as claimed for the purpose of causing the blades to rotate about the longitudinal axis.

In Reference to Claim 5/4/2 and 5/4/3

Goldberg, as modified, teaches:

The vertical-axis wind turbine, in the rejection of claim 4/2 or 4/3 above.

Goldberg, as modified, does not teach:

A vertical-axis wind turbine wherein R' is approximately equal to $1.03R$.

Since applicant has not disclosed that having radius of curvature of the camber line at this specific R dependent value solves any stated problem or is for any particular purpose above the fact that blades of the vertical-axis wind turbine have a camber line with a constant radius of curvature such that the blades interact with wind to cause rotation of the blades about the longitudinal axis and it appears that the camber lines of

the blades of Goldberg, as modified, would perform equally well having the shape and dimensions as claimed by applicant, it would have been an obvious matter of design choice to modify the camber lines of the blades of Goldberg, as modified, by utilizing the specific shape and dimensions as claimed for the purpose of causing the blades to rotate about the longitudinal axis.

In Reference to Claim 6/4/2 and 6/4/3

Goldberg, as modified, teaches:

The vertical-axis wind turbine, in the rejection of claim 4/2 or 4/3 above, wherein R' equals R (see Figure 3, Figure 4B, and column 7 lines 21-32).

15. Claims 25-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goldberg (US Patent No. 5405246) in view of Barker (US Patent No. 1217684).

In Reference to Claim 25

Goldberg teaches:

A vertical-axis wind turbine comprising (see page 1 lines 15-17) a shaft rotatable about a longitudinal axis and a plurality of substantially rigid blades mechanically coupled to the shaft, each of the plurality of blades (see Figure 1) comprising an elongate body having an upper end and a lower end, wherein the upper end and the lower end of each blade are rotationally off-set from each other about the longitudinal axis such that each blade has a helix-like form (see Figure 1), the section of the elongate

body of each blade, taken perpendicularly to the longitudinal axis, being shaped as an aerofoil having a leading edge and a trailing edge and a camber line defined between the leading edge and the trailing edge.

Goldberg does not teach:

A vertical-axis wind turbine characterized in that the length of the camber line of each blade decreases towards the upper and/or lower ends relative to a central portion of each blade.

Barker teaches:

A vertical-axis wind turbine characterized in that the length of the camber line of each blade decreases towards the upper and lower ends relative to a central portion of each blade (see page 1 lines 74-75).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the length of the camber line of the blades as taught by Goldberg by narrowing the camber line towards the upper and lower ends as taught by Barker for the purpose of decreasing the total material required to construct each blade.

In Reference to Claim 26

Goldberg, as modified, teach:

A vertical-axis wind turbine, in the rejection of claim 25 above, wherein the length of the camber line of each blade decreases towards at least a downwind end of each blade (see Barker page 1 lines 74-75).

Conclusion

19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The reference Dereng (US Patent No. 4264279) discloses a camber line radius equal to the radius of a vertical-axis turbine.

The reference Lange (US Patent No. 4115032) discloses a camber a vertical-axis turbine having blades with a decreasing camber lines going from the center to either end.

The reference Clancy (US Patent No. 4718821) discloses a vertical-axis turbine having blades arranged in a helical pattern connected to the central shaft via struts.

The reference Crinion (US Publication No. 2003/0147739 A1) discloses a vertical-axis turbine having blades with decreasing camber lines going from the center to either end.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ADAM BENSON whose telephone number is (571)270-3263. The examiner can normally be reached on M-F 7:30AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Look can be reached on (571)272-4820. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ADAM BENSON/

Examiner, Art Unit 3745

/EDWARD LOOK/

Supervisory Patent Examiner, Art Unit 3745